Roadside Observation Survey

of

Safety Belt and Motorcycle Helmet Use in Indiana

September, 1998

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1.0 EXECUTIVE SUMMARY

The survey observations were collected between September 14 through 27, 1998. This report summarizes the findings of the 1998 Indiana roadside observation survey of safety belt and motorcycle helmet use. The work of planning and conducting the survey was performed by the Purdue University Automotive Transportation Center. The Governor's Council on Impaired & Dangerous Driving and the National Highway Traffic Safety Administration (NHTSA) sponsored the survey and provided guidance and assistance.

This 1998 report describes the twenty-second Indiana safety belt survey. This series of surveys has documented an increase in safety belt use by front-seat occupants of passenger cars on Indiana roadways, beginning with a use rate of less than 25 percent in 1985. An immediate increase to nearly 50 percent was noted when the Indiana Mandatory Safety Belt Use Law came into effect in mid-1987. Between 1988 and 1997, the survey series has documented the slow process of convincing reluctant motorists to adopt safety belt use as a normal component of their driving. In 1994, the survey was redesigned in conformance with newly issued NHTSA guidelines; this 1998 survey is the fifth survey to follow those guidelines. Details concerning the redesign of the survey were presented in the 1994 report. Additionally, 1998 proposed changes in NHTSA regulations were reflected in the 1998 seat belt survey. The 1998 survey was the first conducted after the passage of the Indiana primary or standard safety belt law that became effective July 1, 1998. The law was being enforced by some, but not all, police agencies during the data collection period.

For 1994 and earlier surveys, reporting was confined to passenger cars. In 1995, the survey was modified to permit reporting for a wider variety of vehicle types, including minivans, sport-utility vehicles and pickup trucks. Large passenger vans were included in this 1998 survey as required by proposed NHTSA regulations. In accordance with proposed regulations, no distinction is made between in-state and out-of-state licensed vehicles. All vehicles identified as commercial were excluded.

The findings for 1998 as summarized in Table 1 indicate that the usage rate for front-seat occupants of passenger cars increased 10.7 percent from 57.9 percent in September of 1997 to 68.6 percent in September 1998. For all passenger vehicles the increase in usage was very similar – 10.6 percent increase from 51.2 percent in 1997 to 61.8 percent in 1998.

Table 1

Safety Belt Usage Summary

Vehicle Type	1997 Percent Restrained		1998 Percent Restrained		Relative Precision	95 Percent Confidence Interval
	Weighted	Unweighted	Weighted	Unweighted		
Cars	57.9%	60.4%	68.6%	67.7%	1.5%	66.6% - 70.6%
Pickups	28.1%	29.7%	38.0%	33.5%	2.7%	36.0% - 40.0%
Other Pass.	NA	62.4%	65.3%	64.9%	1.6%	63.3% - 67.3%
All Pass.	51.1%	54.7%	61.8%	60.3%	1.3%	60.2% - 63.4%

Legend: Other Pass. = Large Vans, Mini-vans and Sport Utility Vehicles; Large vans not included in 1997
All Pass. = All non-commercial passenger vehicles

There were 161 data collection sites, located in the following 24 counties:

2 Allen (14)	23 Fountain (5)	34 Howard (7)	56 Newton (4)
10 Clark (8)	24 Franklin (4)	36 Jackson (7)	62 Perry (4)
12 Clinton (5)	26 Gibson (5)	46 LaPorte (9)	64 Porter (12)
14 Daviess (5)	30 Hancock (7)	49 Marion (14)	69 Ripley (5)
16 Decatur (5)	32 Hendricks (8)	50 Marshall (5)	79 Tippecanoe (8)
17 DeKalb (5)	33 Henry (6)	55 Morgan (5)	80 Tipton (4)

Data were collected on all days of the week. Observation sessions were randomly distributed during daylight hours, (the time period between 6:30 a.m. and 6:30 p.m.); traffic was observed for exactly one hour (60 minutes) for each of the 161 sessions. Safety belt use was recorded for front-seat outboard occupants only (driver and right front passenger, if present). The design of the sample as presented in the 1994 report is found in Appendix A. The manner in which the estimates are calculated for the 1998 data, using a revised weighting scheme, is presented in Appendix B.

Drivers overall had a slightly higher unweighted usage rate of 61.0 percent than front-seat passengers (57.9 percent). Female drivers had higher usage rates (69.6 percent) than male drivers (55.3 percent). Likewise, the female passenger rate was 63.4 percent compared to 46.6 percent for male front-seat passengers. The Young Adult (ages 16-34) age group had the lowest usage rate as either a driver (57.6 percent) or a front-seat passenger (48.1 percent). Occupants of pickup trucks continue to lag all other passenger vehicle occupants in restraint use at 33.5 percent. Freeways had the highest usage rates of any roadway classification and, for other roadway classification, rates were higher in urban (64.2 percent) than in rural (56.5 percent) areas.

The estimates for safety belt and motorcycle helmet use presented in this report were based on the following raw data tallies:

- 16,764 passenger cars and station wagons, 21,567 occupants evaluated;
- 514 vans, 685 occupants evaluated;
- 2,928 minivans, 3,912 occupants evaluated;
- 2,297 sport-utility vehicles, 2,966 occupants evaluated;
- 5,755 pickup trucks, 7,164 occupants evaluated, and;
- 822 motorcycles, 984 motorcyclists evaluated.

The overall weighted helmet usage by motorcyclists was 33.4 percent. The 161 observed motorcycle passengers had a somewhat higher unweighted usage rate of 38.5 percent than the 33.5 percent usage rate for the 822 observed drivers.

Survey operations and the results are discussed in greater detail in the body of this report and in the technical appendices. The original survey data are available through The Governor's Council on Impaired & Dangerous Driving, Office of Traffic Safety.

2.0 SURVEY DESIGN

2.1 Introduction

The 1998 Indiana Roadside Observation Survey of Safety Belt and Motorcycle Helmet Use is the twenty-second in a series of surveys originally designed in 1985. The first through seventeenth surveys (1986 through 1993) were all conducted using a common protocol. In 1994, the survey was redesigned in conformance with guidelines published in the *Federal Register* [vol. 57, no. 125, June 2, 1992: 2889928904] by the National Highway Traffic Safety Administration; the revised design was discussed in the 1994 report (see Appendix A). This 1998 survey is the fifth survey conducted under the revised design.

The 1995 survey included several modifications of the 1994 protocols. This 1998 survey is a replication of the 1995 survey design, with several modifications to the field protocols as discussed in Section 2.4. At the request of The Governor's Council on Impaired & Dangerous Driving, the survey team collected supplemental data in 1995 at all observation locations to enable reporting for various vehicle types. Additional data was collected at selected sites to provide information concerning vehicle size and the age and gender of the observed subjects.

Field observations for the 1998 survey were collected between September 14-27, 1998. The observations were collected at 161 different roadside locations in 24 counties. At each location, the observer scrutinized passing traffic and recorded shoulder strap use for exactly 60 minutes. The observation sessions were limited to daylight hours (6:30 a.m. - 6:30 p.m.), giving 12 one-hour slots each day and 84 one-hour slots for the seven days of a week. The 161 observation sessions were grouped into clusters, and sites within each cluster were randomly scheduled such that each of the 84 slots was used at least once. As required by NHTSA regulations, data were collected on all days of the week and at all times during daylight hours.

While planning for the 1998 data collection, it was determined that, by switching to a cluster procedure for grouping observation locations by day and time, the total number of observation locations could be increased by 25 percent without incurring increased data collection costs. In reviewing the sites used in 1997, it was discovered that the number of sites and amount of data collected representing certain roadway functional classes (primarily rural and urban local roads) was far less than desired if the survey is to meet the probability based requirement for site selection. It was decided to retain as many of the 1997 sites as feasible to ensure comparability of the 1998 survey with previous years and to select new sites to reduce the imbalance in functional roadway class data. A new weighting scheme was selected to adjust the observed safety belt use rates to the most recent (1997) Indiana functional class vehicle miles traveled (VMT) estimates. Section 2.4 further discusses the selection of sites and roadway functional classes.

2.2 New Data for 1995 Continued for 1998

For the 1986–1994 period, Indiana's program of safety belt use surveys was restricted to front-seat outboard occupants (driver and right-front passenger, if present) of passenger cars and station wagons. Indiana's Mandatory Safety Belt Use Law states that front-seat occupants of passenger vehicles must wear a safety belt (with certain specified exceptions). Pickup trucks and other passenger vehicles registered as trucks are exempt.

Since 1985, the number of vans (primarily minivans) and sport-utility vehicles in Indiana has increased dramatically, with a substantial proportion of these being licensed as passenger vehicles. The number of pickup trucks has likewise increased significantly. The Governor's Council determined that it would be desirable to include these vehicles in the safety belt use tallies beginning with the 1995 survey.

For observation locations where it is not feasible to count the entire population of vehicles that pass the observer, it is desirable to collect supplemental counts of the full volume of subject vehicles. This is done so the weighting procedure can reflect the true traffic volume at such sites. Beginning in 1995, separate supplemental traffic volume counts were collected for the combined class of minivans and sport-utility vehicles. Supplemental counts of pickups were not conducted.

This 1998 survey includes an estimate for safety belt use by occupants of pickup trucks and for all passenger vehicles. Supplemental counts of all passenger vehicles were conducted for a ten-minute period at each site. This count was used to estimate the hourly passenger vehicle volume whenever the traffic volume exceeded the ability of the observer to note and code the desired vehicle type, restraint usage, age and gender judgements for all passenger vehicles traveling in either direction on the designated road. Procedures for collecting the supplemental counts are described in Appendix C.

2.3 Long Form Data Collection

Under the protocols employed for the first seventeen surveys (1986 through 1993), special data collection efforts were performed at one-fourth of the observation locations. These special data enabled limited reporting of safety belt use for passenger car size (small, medium, large), motorist role (driver vs. passenger), gender and visually estimated age range (infant, small child, large child, and adults age 16-34, 35-54, and 55+). The data collected for this subsample were referred to as the "long form" data. Because of the survey redesign, the long form data were not collected for the 1994 survey.

The Governor's Council expressed its desire that the long form data should be collected for the 1995 survey. The survey team chose to collect long form data only at observation locations where 200 or fewer vehicles were counted during the 1994 survey. At these relatively low volume sites, the observers could maintain accurate tallies and also record the long form data. A total of 64 observation locations were counted under the long form protocols for the 1995 survey. This strategy was continued for the 1996 and 1997 surveys, with protocol modifications in 1997 including the replacing of passenger car size data with vehicle type coding that distinguished minivan from Sport/Utility vehicle data.

In the 1998 survey, long form data was collected at all 161 locations. This was done to remove any bias in this data due to different patterns in safety belt use for high volume sites not represented in the 1995–1997 long form data.

The redesigned 1994 survey was launched without any pilot testing or other assessment of the randomly selected observation locations. Several of these designated sites turned out to be very lightly traveled roadways, with the result that at five locations no passenger cars were observed during the scheduled observation period. At an additional eight locations, fewer than ten passenger cars were observed.

The survey team determined that it would be desirable to replace these very low count sites for the 1995 survey. A total of 22 observation locations having counts less than 20 cars in 1994 were identified. The observers were instructed to arrange their schedules so that they would arrive at the general vicinity of these sites with ample time to explore the local area and find a new location where there would be traffic to observe. The original selection of observation locations was designated in terms of counties and roadway types within counties. For all locations where replacement sites were sought, the observers were instructed to find a new location on the same roadway type within the same county. Unfortunately, observers were not provided any roadway functional class information and had to depend on intuition in selecting a suitable replacement. In several instances the original site was in a rural location and the replacement site within an urban boundary. A total of 16 new locations (from among the 22 candidate sites) were substituted. For six of the candidate sites, primarily freeway exit ramps, a suitable substitute was not available so data collection was continued at the original site. The traffic volume at a number of these sites was still unacceptably low resulting in additional site changes in 1996 or 1997.

2.4 New Reporting for 1998

In 1998, a 25 percent increase in sites was desired. Most (112 of the 128) of the 1997 sites were retained with 16 replacement and 33 additional new sites selected.

The selection of new and replacement sites was done to reflect the distribution of roadway types found in the state. The procedure used to select sites was as described in the 1994 Report for choosing local sites (see Appendix A). The roadway types are taken from the FHWA functional classes—a classification system that is based upon the type of service the street or highway is intended to provide. The roadway classes and their derivative FHWA functional class codes are as follows:

Freeways: Interstates: Limited access, divided facilities of at least four lanes and designated by the Federal Highway Administration as part of the Interstate System. Rural: FC=1; Urban: FC=11

Other Freeways and Expressways: All urban principal arterial with limited control of access not on the Interstate system. FC=12

Arterials: Other Principal Arterials: Major streets or highways, many with multi lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel. Rural: FC=2; Urban: FC=14

Minor Arterials: Streets and highways linking cities and larger towns in rural areas. Rural: FC=6; Distributing trips to small geographic areas in urban areas (not penetrating identifiable neighborhoods.) Urban: FC=16

Collectors: In rural areas, routes serving intra-county, rather than state wide travel. Major Rural: FC=7, Minor Rural: FC=8. In urban areas, streets providing direct access to neighborhoods as well as direct access to arterials. Urban: FC=17

Local: Local Streets and Roads. Streets whose primary purpose is feeding higher order systems, providing direct access with little or no through traffic. Rural: FC=9; Urban: FC=19

2.5 Motorcycle Helmet Use

Collection of in-transit motorcycle data was continued in 1998 with additional information on the roadway functional class needed to determine whether there is a relationship between roadway class and helmet use.

Reporting on motorcycle helmet use was inaugurated in 1994, as specified by the NHTSA guidelines in the *Federal Register*. Under these guidelines, observations of motorcyclists to ascertain helmet use must be regarded as a convenience sample, collected as an adjunct to the primary mission (to observe safety belt use). The experience gained during the 1994 through 1996 surveys indicates that relatively few motorcycles are observed at the observation locations.

Beginning with the 1997 survey, the motorcycle observation protocols were modified in two ways. First, observations collected for motorcycle drivers and motorcycle passengers were coded and analyzed separately. Second, the observers recorded motorcycle helmet observations while they were in transit from one location to another. In this manner, the number of motorcyclists observed was increased. The observations collected in transit were recorded separately from the observations collected on site.

Upon analysis of the 1997 motorcycle data, it was discovered that the helmet usage rate was higher (48.2 percent) for the data collected in transit than for the data collected at observation sites (38.7 percent). Since most of the travel mileage was on rural interstates and arterials, it was hypothesized that helmet usage varies by roadway class. Since the on-site data included all motorcyclists observed at the site, it could not be assumed that the roadway class for the motorcycle data was identical to the other passenger vehicle data. In preparing for the 1998 survey, the roadway class for intersecting roads was determined and the data collection procedure was modified such that observers noted all instances when an observed motorcyclist was traveling on an intersecting road rather than the designated road for a site.

3.0 RESULTS

3.1 Restraint Usage by Gender and Role

The analysis of restraint usage patterns for drivers versus passengers and males versus females is across all sites and based upon unweighted usage rates. Front seat occupants for whom the observer did not make a gender judgement are excluded from this analysis. As seen in Table 2, drivers overall had a slightly higher usage rate of 61.0 percent compared to 57.9 percent for front seat, outboard passengers. This difference was largest for passenger car occupants.

Table 2

Indiana 1998 Unweighted Restraint Usage by Vehicle Type, Gender and Role

	All Drivers				Front-Seat Passengers				Eligible Occupan
Vehicle Type	NR	U	R	Percent Restrained	NR	U	R	Percent Restrained	Percent Restraine
Cars	5,155	205	11,404	68.9%	1,701	131	2,972	63.6%	67.7%
Pickups	3,698	145	1,912	34.1%	956	25	428	30.9%	33.5%
Mini-vans	835	66	2,027	70.8%	283	53	648	69.6%	70.5%
Large Vans	288	39	187	39.4%	94	9	68	42.0%	40.0%
SUV	837	49	1,411	62.8%	245	37	387	61.2%	62.4%
All Pass.	**10,813**	**504**	**16,941**	**61.0%**	**3,279**	**255**	**4,503**	**57.9%**	**60.3%**
	Female Drivers				Female Front-Seat Passengers				Both
Cars	2,238	38	5,641	71.6%	1,018	70	2,152	67.9%	70.5%
Pickups	385	5	276	41.8%	461	9	280	37.8%	39.7%
Mini-vans	347	19	1,053	75.2%	178	31	464	72.3%	74.3%
Large Vans	77	8	81	51.3%	48	3	47	49.5%	50.6%
SUV	301	9	621	67.4%	151	18	278	64.8%	66.5%
All Pass.	**3,348**	**79**	**7,672**	**69.6%**	**1,856**	**131**	**3,221**	**63.4%**	**67.7%**
	Male Drivers				Male Front-Seat Passengers				Both
Cars	2,883	53	5,685	66.4%	643	29	764	54.3%	64.7%
Pickups	3,287	42	1,618	33.0%	476	9	135	22.1%	31.8%
Mini-vans	481	14	955	66.5%	98	11	161	62.2%	65.8%
Large Vans	209	13	103	33.0%	44	1	17	27.9%	32.2%
SUV	529	18	778	59.5%	89	9	100	52.9%	58.7%
All Pass.	**7,389**	**140**	**9,139**	**55.3%**	**1,350**	**59**	**1,177**	**46.6%**	**54.1%**

Note: Drivers and passengers with unknown gender included in totals.

Legend: R= Restrained; NR=Not Restrained; U=Unknown Restraint; All Pass.=All non-commercial Passenger vehicles; SUV=Sport Utility Vehicles

Source: Roadside Observation Survey of Safety Belt and Motorcycle Helmet Use in Indiana, 1998.

Overall, female drivers had a 69.6 percent usage rate versus a 55.3 percent rate for male drivers and had higher rates as a driver for each vehicle type. Note that 83 percent of pickup truck drivers were male and these male pickup drivers had only a 33.0 percent usage rate. While there were significantly more male (16,668) than female (11,099) drivers, there were more than twice as many female as male front seat passengers. Female passengers overall had a 63.4 percent usage rate, which was lower than the female driver rate but much higher than the male passenger rate of 46.6 percent. The usage patterns by vehicle type were very similar for drivers and passengers. Male pickup passengers had the lowest restraint usage rate of any subgroup.

3.2 Restraint Usage by Age of Drivers and Passengers

The Young (ages 16-34) age group had the lowest restraint usage rate as either a driver or a front-seat passenger. As shown in Table 3, the age related order from lowest to highest of Young, Child, Mid-Adult, Older-Adult is the same for drivers and passengers. The lowest subgroup with a 48.1 percent rate was Young (ages 16–34) passengers and the highest was Older Adult passengers at 71.1 percent.

Table 3

Indiana 1998 Unweighted Restraint Usage by Age and Role

Drivers

Vehicle Type	Young (16-34) Count	Young (16-34) Percent Restrained	Mid-Adult (35-54) Count	Mid-Adult (35-54) Percent Restrained	Older Adult (55+) Count	Older Adult (55+) Percent Restraine
Cars	6,489	64.1%	6,430	70.7%	3,615	74.2%
Pickups	1,917	31.0%	2,555	35.5%	1,119	35.6%
Mini-vans	659	70.9%	1,706	70.7%	505	71.1%
Large Vans	68	29.4%	301	41.5%	121	39.1%
SUV	921	60.4%	1,068	63.1%	258	69.7%
All Pass.	10,054	57.6%	12,060	61.9%	5,618	65.3%

Passengers

Vehicle Type	Child (6-15) Count	Child (6-15) Percent Restrained	Young (16-34) Count	Young (16-34) Percent Restrained	Mid-Adult (35-54) Count	Mid-Adult (35-54) Percent Restrained	Older Adult (55+) Count	Older Adult (55+) Percent Restraine
Cars	370	57.7%	1,687	53.2%	1,332	66.2%	1,315	76.4%
Pickups	126	37.7%	441	20.5%	544	31.9%	268	41.3%
Mini-vans	144	73.8%	224	61.8%	377	68.2%	201	80.1%
Large Van	15	60.0%	33	22.6%	69	35.3%	45	59.1%
SUV	72	63.2%	231	53.6%	242	64.5%	103	69.1%
All Pass.	727	57.7%	2,616	48.1%	2,564	58.2%	1,932	71.1%

Note: Restraint Usage unknown not included.

Legend: All Pass. = All non-commercial passenger vehicles; SUV = Sport Utility Vehicles

Source: Roadside Observation Survey of Safety Belt and Motorcycle Helmet Use in Indiana, 1998.

The difference in usage rates for drivers versus passengers was largest for the Young group with drivers having higher rates for each type of vehicle.

Only 6 infants, all in child safety seats, and 46 young children (ages 1-5) were noted by the observers as passenger in the right-front seat. These low rates of child front-seat occupancy are a positive finding since riding in the back seat is safer. However, only 25 percent of the ages 1-5 group were restrained by child safety seats with an additional 33 percent using a safety belt. It should be noted that it is not possible to observe whether a child is restrained by a lap belt only and it is generally more difficult to determine if the shoulder belt is used for a small passenger. Also, in this survey no coding of data for front-center passengers was attempted. Pickups are the only vehicle type with a significant number of front-center passengers. Such passengers are frequently children. Observers also noted several infants or small children sitting in the lap of a passenger. This data was not systematically recorded. Thus, restraint rates for infants and young children can not be estimated with any degree of confidence from the 1998 survey. Children coded as occupying child safety seats were excluded from the safety restraint rate estimates.

3.3 Restraint Usage by Vehicle Type

When examined by vehicle type, 1998 data reveal that occupants of pickup trucks still lag all other passenger vehicle occupants in restraint usage. Overall only 38.0 percent (33.5 percent unweighted) of pickup occupants were belted (See Tables 1 and 2). This may reflect the fact that these vehicles are still exempt from Indiana safety belt laws. Large vans, however, which would in most instances be covered by the law, show just a 40.0 percent unweighted restraint usage. This is an area of concern, but large vans comprised only 1.8 percent of vehicles observed. Since pickup trucks comprised 20.4 percent of vehicles observed, improvement in belt usage by their occupants would have more impact upon overall usage numbers and have greater potential for saving lives and reducing serious injuries.

Overall seatbelt usage rates for the other vehicle types are much higher. Minivan occupants exhibited the highest unweighted usage rate (70.5 percent); they were followed by car occupants (67.7 percent) and sport utility vehicle occupants (62.4 percent). The difference in usage by occupants of sport utility vehicles and pickup trucks is striking since such vehicles are often very similar in size and use. As previously noted, some of this difference may be attributed to the very high percentage of male pickup truck drivers; most of the difference is attributable to the exclusion of pickups from the Indiana restraint laws.

3.4 Restraint Usage by Roadway Class

The design of Indiana's survey in 1994 anticipated that safety restraint usage may vary depending on both the roadway classification and the degree of urbanization of the location. Table 4 displays the relationships between the weighted restraint usage roadway class and urbanization as quantified by total county Vehicle Miles Traveled (VMT). Overall, restraint usage rates were higher in urban areas with the largest difference observed for local roads and streets. Freeways had the highest usage rates of any roadway class and rates varied little between rural (71.6 percent) and urban locations (71.5 percent).

For each of the VMT strata groups, there were practically no differences among the usage rates for the different classes of urban roads, excluding urban freeways, but there were large differences between strata groups for each of these roadway classes. The usage rates for Medium VMT counties were higher than for Low VMT counties, and rates for High VMT counties were higher than for Medium VMT counties. For rural roadways, there were significant overall differences by class with arterials having the highest rates (61.6 percent), followed by collectors with 53.7 percent and local roads with 42.8 percent. The differences between strata groups were much smaller than for urban roadways for each roadway class but had the same large, medium, small VMT order.

Table 4

Indiana 1998 Weighted Restraint Usage by Roadway Class, Strata and Vehicle Type

Vehicle Type	Rural Roads: County VMT Strata			Rural Roads: Entire State	Urban Roads: County VMT Strata			Urban Roads: Entire State
	Hi	Mediu	Lov		Hi	Mediu	Low	Stat
	Rural Freeways				**Urban Freeways**			
Cars	77.8%	86.2%	74.6%	79.7%	75.7%	73.4%	87.5%	75.7%
Pickups	46.5%	49.6%	42.6%	46.0%	52.5%	43.4%	28.6%	50.1%
Other Pass.	69.3%	82.0%	67.5%	73.4%	74.7%	71.6%	64.9%	73.8%
All Pass.	**70.9%**	**78.0%**	**66.2%**	**71.6%**	**72.3%**	**67.1%**	**75.0%**	**71.5%**
	Rural Arterials				**Urban Arterials**			
Cars	72.6%	73.3%	68.3%	70.3%	72.6%	67.4%	58.1%	69.2%
Pickups	34.1%	36.2%	34.8%	35.0%	47.5%	36.3%	27.0%	41.4%
Other Pass.	69.0%	73.6%	60.6%	65.3%	69.9%	65.2%	57.1%	66.8%
All Pass.	**64.7%**	**64.6%**	**59.4%**	**61.6%**	**68.8%**	**60.9%**	**49.4%**	**63.8%**
	Rural Collectors				**Urban Collectors**			
Cars	72.6%	62.0%	60.7%	63.0%	71.5%	58.8%	65.4%	66.9%
Pickups	39.2%	31.2%	24.9%	29.3%	47.6%	27.5%	15.3%	37.1%
Other Pass.	68.4%	66.0%	53.2%	59.9%	73.8%	55.4%	44.4%	64.2%
All Pass.	**64.8%**	**54.8%**	**49.6%**	**53.7%**	**69.1%**	**51.3%**	**52.0%**	**61.4%**
	Rural Local Roads				**Urban Local Streets**			
Cars	52.6%	56.4%	48.9%	50.8%	67.4%	71.1%	57.0%	67.0%
Pickups	37.9%	14.4%	20.6%	20.8%	48.8%	35.8%	14.4%	40.3%
Other Pass.	45.9%	60.4%	42.5%	46.7%	64.5%	64.7%	62.4%	64.3%
All Pass.	**47.2%**	**46.8%**	**41.0%**	**42.8%**	**65.0%**	**64.6%**	**51.9%**	**63.1%**

Other Pass. = Large Vans, Mini-vans and Sport/Utility Vehicles

All Pass. = All non-commercial passenger vehicles

Table 5 displays the unweighted restraint usage rates for both 1997 and 1998 for the same roadway classes as in Table 4. In addition, the number of sites and number of observations for each year are shown.

Table 5

Indiana 1997-1998 Unweighted Restraint Usage by Roadway Class and Vehicle Type

Vehicle Type	Rural Roads							Urban Roads						
	1997			1998			98' - 97'	1997			1998			98' - 97'
	Sites	Obs.	% Res.	Sites	Obs.	% Res.	% Res.	Sites	Obs.	% Res.	Sites	Obs.	% Res.	% Res.
Rural Freeways / **Urban Freeways**														
Cars	13	1,493	76.4%	16	1,800	79.0%	2.6%	16	4,706	73.0%	14	2,117	76.1%	3.0%
Pickups		417	48.9%		590	44.7%	-4.2%		1,272	42.6%		536	49.1%	6.5%
Mini-vans		249	77.1%		310	81.0%	3.9%		760	77.1%		420	76.7%	-0.4%
Large Vans					76	40.8%	NA					75	48.0%	NA
SUV		227	76.7%		300	72.3%	-4.3%		578	73.4%		358	75.1%	1.8%
All Pass.	13	2,386	71.7%	16	3,076	71.0%	-0.7%	16	7,316	68.2%	14	3,506	71.3%	3.1%
Rural Arterials / **Urban Arterials**														
Cars	18	3,683	58.5%	20	3,154	68.8%	10.3%	36	14,217	57.8%	27	5,805	68.7%	10.9%
Pickups		1,629	28.7%		1,267	33.1%	4.3%		3,816	27.6%		1,474	36.3%	8.7%
Mini-vans		691	59.6%		657	69.9%	10.2%		2,041	63.6%		852	73.1%	9.5%
Large Vans					80	48.8%	NA					149	34.2%	NA
SUV		430	59.1%		419	61.8%	2.7%		1,531	56.6%		712	62.1%	5.5%
All Pass.	18	6,433	51.1%	20	5,577	60.0%	8.9%	36	21,605	52.9%	27	8,992	62.7%	9.8%
Rural Collectors / **Urban Collectors**														
Cars	30	3,003	56.4%	36	3,347	62.4%	6.0%	6	860	52.3%	8	972	67.5%	15.2%
Pickups		1,403	24.7%		1,650	28.5%	3.8%		289	16.3%		253	32.8%	16.5%
Mini-vans		486	59.7%		676	67.5%	7.8%		157	52.2%		194	76.3%	24.1%
Large Vans					98	39.8%	NA					53	26.4%	NA
SUV		383	50.4%		477	54.5%	4.1%		89	36.0%		147	64.6%	28.7%
All Pass.	30	5,275	47.8%	36	6,248	53.0%	5.2%	6	1,395	43.8%	8	1,619	61.5%	17.7%
Rural Local Roads / **Urban Local Streets**														
Cars	6	687	41.0%	20	1,715	50.3%	9.3%	3	338	56.8%	20	2,321	68.1%	11.3%
Pickups		223	17.0%		746	20.4%	3.3%		100	19.0%		478	32.0%	13.0%
Mini-vans		109	43.1%		290	49.0%	5.8%		71	59.2%		394	69.5%	10.4%
Large Vans					41	39.0%	NA					65	44.6%	NA
SUV		69	27.5%		244	49.6%	22.1%		89	58.3%		223	60.5%	2.2%
All Pass.	6	1,088	35.5%	20	3,036	42.6%	7.1%	3	598	50.3%	20	3,481	62.4%	12.1%
All Rural Roads / **All Urban Roads**														
Cars	67	8,866	59.5%	92	10,016	65.3%	5.9%	61	20,121	61.1%	69	11,215	69.9%	8.7%
Pickups		3,672	28.8%		4,253	30.7%	1.9%		5,477	30.3%		2,741	37.7%	7.4%
Mini-vans		1,535	61.3%		1,933	67.7%	6.4%		3,029	66.3%		1,860	73.5%	7.2%
Large Vans					295	42.4%	NA					342	38.0%	NA
SUV		1,109	57.7%		1,440	59.5%	1.8%		2,234	60.1%		1,440	65.3%	5.2%
All Pass.	67	15,182	52.1%	92	17,937	56.5%	4.4%	61	30,861	56.1%	69	17,598	64.2%	8.1%

Obs = Number of Observations - Front Seat Outboard Occupants

% Res. = Percent Restrained - Restraint Usage unknown not included

All Pass. = All non-commercial passenger vehicles

SUV = Sport/Utility Vehicles

The unweighted safety belt usage rate was essentially unchanged from 1997 for occupants traveling on Rural Freeways and the usage rate increased only 3.1 percent for Urban Freeways. Large increases in usage rates were found for Rural Arterials (8.9 percent), Urban Arterials (9.8 percent), Urban Collectors (17.7 percent), and Urban Local Streets (12.1 percent). Smaller improvements in usage rates were found for Rural Collectors (5.2 percent) and Rural Local Roads (7.1 Percent). Generally the increases in usage rates were smaller for pickup truck occupants traveling on rural roads than for occupants of other vehicles. Pickup truck occupants did exhibit significantly higher usage rates on urban roads, even though the new safety belt law does not affect them.

3.5 Motorcycles and Helmet Use

As in 1997, passengers exhibited a higher usage rate (38.5 percent unweighted) than drivers (33.5 percent). These unweighted usage rates are lower than the 48.7 percent rate for passengers and 41.7 percent for drivers observed in 1997. Table 6 displays the helmet usage patterns by role and roadway class for 1998 data. Comparing the in-transit (OFF-SITE) data with the ON-SITE data reveals that 20.5 percent of the OFF-SITE occupants versus only 3.8 percent of the ON-SITE occupants were traveling on rural freeways. On rural interstate roads, helmet use was 65.5 percent overall. However, helmet use on urban interstate roads was only 41.9 percent. For other roadway classes, helmet use varied between 27 and 39 percent. Thus it appears to be extremely important to distinguish rural freeway usage from other motorcycle travel.

Using the estimation procedures described in Appendix B, Section B.3, an overall weighted statewide helmet usage rate of 33.4 percent was calculated. The weighted rate for OFF-SITE data was estimated as 29.4 percent and the weighted rate for ON-SITE data was 34.3 percent.

Table 6

Indiana 1998 Unweighted Motorcycle Helmet Usage by Role and Roadway Class

Rur/Urb	Roadway Class	Driver NH	Driver H	Driver % H	Total Drivers	Passenger NH	Passenger H	Passenger % H	Occupants NH	Occupants H	Occupants % H	Total Occupants
ALL MOTORCYCLE DATA												
Rural	**Freeway**	29	60	67.4%	89	9	12	57.1%	38	72	65.5%	110
	Arterials	103	37	26.4%	140	27	11	28.9%	130	48	27.0%	178
	Collectors	91	37	28.9%	128	13	10	43.5%	104	47	31.1%	151
	Locals	17	13	43.3%	30	3	0	0.0%	20	13	39.4%	33
	TOTAL	240	147	38.0%	387	52	33	38.8%	292	180	38.1%	472
Urban	**Freeway**	43	28	39.4%	71	7	8	53.3%	50	36	41.9%	86
	Arterials	229	83	26.6%	312	37	20	35.1%	266	103	27.9%	369
	Collectors	16	8	33.3%	24	1	1	50.0%	17	9	34.6%	26
	Locals	19	9	32.1%	28	2	0	0.0%	21	9	30.0%	30
	TOTAL	307	128	29.4%	435	47	29	38.2%	354	157	30.7%	511
TOTAL	**Freeway**	72	88	55.0%	160	16	20	55.6%	88	108	55.1%	196
	Arterials	332	120	26.5%	452	64	31	32.6%	396	151	27.6%	547
	Collectors	107	45	29.6%	152	14	11	44.0%	121	56	31.6%	177
	Locals	36	22	37.9%	58	5	0	0.0%	41	22	34.9%	63
	TOTAL	547	275	33.5%	822	99	62	38.5%	646	337	34.3%	983
OFF-SITE DATA												
Rural	**Freeway**	22	50	69.4%	72	6	11	64.7%	28	61	68.5%	89
	Arterials	31	9	22.5%	40	6	2	25.0%	37	11	22.9%	48
	Collectors	30	11	26.8%	41	8	1	11.1%	38	12	24.0%	50
	Locals	3	2	40.0%	5	2	0	0.0%	5	2	28.6%	7
	TOTAL	86	72	45.6%	158	22	14	38.9%	108	86	44.3%	194
Urban	**Freeway**	23	14	37.8%	37	7	7	50.0%	30	21	41.2%	51
	Arterials	101	40	28.4%	141	16	9	36.0%	117	49	29.5%	166
	Collectors	6	4	40.0%	10	0	1	100.0%	6	5	45.5%	11
	Locals	11	1	8.3%	12	1	0	0.0%	12	1	7.7%	13
	TOTAL	141	59	29.5%	200	24	17	41.5%	165	76	31.5%	241
TOTAL	**Freeway**	45	64	58.7%	109	13	18	58.1%	58	82	58.6%	140
	Arterials	132	49	27.1%	181	22	11	33.3%	154	60	28.0%	214
	Collectors	36	15	29.4%	51	8	2	20.0%	44	17	27.9%	61
	Locals	14	3	17.6%	17	3	0	0.0%	17	3	15.0%	20
	TOTAL	227	131	36.6%	358	46	31	40.3%	273	162	37.2%	435
ON-SITE DATA												
Rural	**Freeway**	7	10	58.8%	17	3	1	25.0%	10	11	52.4%	21
	Arterials	72	28	28.0%	100	21	9	30.0%	93	37	28.5%	130
	Collectors	61	26	29.9%	87	5	9	64.3%	66	35	34.7%	101
	Locals	14	11	44.0%	25	1	0	0.0%	15	11	42.3%	26
	TOTAL	154	75	32.8%	229	30	19	38.8%	184	94	33.8%	278
Urban	**Freeway**	20	14	41.2%	34	0	1	100.0%	20	15	42.9%	35
	Arterials	128	43	25.1%	171	21	11	34.4%	149	54	26.6%	203
	Collectors	10	4	28.6%	14	1	0	0.0%	11	4	26.7%	15
	Locals	8	8	50.0%	16	1	0	0.0%	9	8	47.1%	17
	TOTAL	166	69	29.4%	235	23	12	34.3%	189	81	30.0%	270
TOTAL	**Freeway**	27	24	47.1%	51	3	2	40.0%	30	26	46.4%	56
	Arterials	200	71	26.2%	271	42	20	32.3%	242	91	27.3%	333
	Collectors	71	30	29.7%	101	6	9	60.0%	77	39	33.6%	116
	Locals	22	19	46.3%	41	2	0	0.0%	24	19	44.2%	43
	TOTAL	320	144	31.0%	464	53	31	36.9%	373	175	31.9%	548

H = Helmeted
NH = Not Helmeted
% H = Percent Helmeted

4.0 CONCLUSIONS AND RECOMMENDATIONS

The primary findings of the 1998 safety belt survey are that the Indiana usage rate has increased by more than ten percent from 51.1 percent in 1997 to 61.8 percent in 1998. This improvement was slightly greater for passenger car occupants and less for occupants of pickup trucks. The passage of the standard safety belt law, which went into effect on July 1, 1998, is the most likely cause for this significant improvement in safety belt usage.

An Indiana court subsequent to the September data gathering period judged the standard safety belt law unconstitutional. It is presently not being enforced while this decision is being appealed to the Indiana Supreme Court. If this lower-court decision is upheld, it will be necessary to introduce an amended version of the law in the Indiana legislature.

The usefulness of Operation Pullover in encouraging safety belt use needs to be emphasized by the Governor's Council. The use of the annual safety belt data to evaluate the Operation Pullover activities in the 24 counties represented in the survey should be considered. The wide support that was demonstrated for the 1998 law in legislative committee hearings may have encouraged the public to make a habit of wearing safety belts. The Council should draw on this support in continuing efforts to educate Indiana's citizens concerning the life saving benefits of safety belts.

Education and enforcement efforts need to be targeted at those segments of the population that have demonstrated low usage rates. These include young adults and occupants of large vans and pickup trucks. It would be highly desirable to amend the current safety belt law to apply it to the occupants of pickups and other vehicles currently licensed as light trucks. Using restraint usage data for pickup occupants killed in 1996 crashes, it is estimated that 27 lives would have been saved that year if the restraint usage rate were the same as for cars.

Strict enforcement of the Indiana Child Restraint Law and the Graduated License Law should help in increasing the usage rates of children and teenagers. It would be highly desirable to initiate data collection efforts that monitor the safety restraint usage of these age groups. Such data would be useful in evaluating the effects of these laws on saving lives and reducing injuries.